

**2007 ACCOMPLISHMENT REPORT
&
2008
SOUTH END COMPLEX
&
BASQUE WELLS & CRATERS FIRES
PROPOSED
BURNED AREA REHABILITATION PLAN**

UNIT: US Fish and Wildlife Service
Malheur National Wildlife Refuge

LOCATION: Princeton, Harney County, Oregon

DATE: September 6, 2007

PREPARED BY: Edward Gheen
Implementation Leader

Submitted By: Edward C. Gheen Date: 8/28/07
Title (Burned Area Rehabilitation Team Leader.)

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SOUTH BANK, MUD CREEK, 2006 GRANDAD BURN

EXECUTIVE SUMMARY

Introduction

This Rehabilitation Plan has been prepared in accordance with Department of the Interior and U.S. Fish and Wildlife Service policy. This plan provides rehabilitation recommendations for all lands burned within the South End Complex & Basque Wells & Craters Fire perimeter and downstream impact areas including: public lands administered by the U.S. Fish and Wildlife Service and other

jurisdictions if necessary. The primary objectives of the South End Complex & Basque Wells & Craters Fire Rehabilitation Plan are:

- To repair or improve lands unlikely to recover naturally from severe wildland fire damage by emulating historic or pre-fire ecosystem structure, function, diversity, and dynamics according to approved land management plans.
- Restore or establish healthy, stable ecosystems, even if these ecosystems cannot fully emulate historic or pre-fire conditions as specified in approved land management plans (native vegetative sites, riparian systems, unique environments/habitats, special wildlife use areas).
- Repair or replace fire damaged operating facilities (e.g., Refuge infrastructures, interpretive signs and exhibits, shade shelters, fences, road culverts, etc.)

Fire Background Information

The South End Complex and Basque Wells and Craters Fires began on August 21 and 22, 2006 and grew rapidly in size. While lightning ignited portions of the complex an arson investigation is currently on-going for parts of the Grandad and Krumbo Butte Fires. Extreme fire behavior with rapid rate of spread and high flame lengths were observed during the initial burning periods. The fire burned primarily in three Great Basin fuel models including annual and perennial grasses (Fuel Model 1), sagebrush (Fuel Model 2), and to a limited degree in aspen/mountain shrub (Fuel Model 8/5) There were stringers of large juniper and aspen scattered across the upper portions of the complex that supported fire spread and occasionally torched out. The fires burned a total of 135,009 acres between the elevations of 4,140 and 8,371 feet, all within Harney County, Oregon. On the Malheur National Wildlife Refuge 4,149 acres burned. A Type I Incident Management Team California Interagency IMT 4 was deployed on August 22, 2006. The fires within the complex were contained on September 1, 2006.

The Department of the Interior National Burned Area Emergency Response (BAER) Team conducted an analysis of fire effects using aerial and ground reconnaissance methods throughout the fire area. The watershed group, composed of four hydrologists and a soil scientist, assessed and mapped the overall fire impacts on watershed conditions and developed a soil burn severity map. Two vegetation and range specialists worked with local BLM and Malheur National Wildlife Refuge vegetation, range, and forestry specialists to evaluate and assess fire effects impacts to vegetation resources, including identification of noxious invasive weed populations and fire induced vegetation mortality. An archeologist inventoried wildland fire suppression impacts and fire effects to known culturally significant sites to determine if these sites require stabilization treatments to prevent further damage or loss. The archeologist initiated consultations with the Oregon State Historic Preservation Officer and Tribes associated with the South End Complex and Basque Well and Craters Fires.

The wildlife biologists in coordination with BLM and U.S. Fish and Wildlife Service wildlife biologists conducted an assessment of fire effects to Federal Threatened and Endangered (T&E) wildlife and state protected species and their associated habitat. The biologists also evaluated suppression impacts to wildlife species and initiated emergency Section 7 consultation with the U.S. Fish and Wildlife Service, Bend Field Office. The Team Geographic Information System (GIS) specialists gathered data layers necessary for the plan, coordinated GIS activities, processed data calculations for other resource

specialists, and produced maps for the BAER Plan and presentations. Resource assessments produced by these specialists can be found in Appendix III and individual treatment specifications identified in the resource assessments and proposed for emergency stabilization funding are located in Part I, Treatment Specifications. A summary of proposed FY 2008 treatment costs can be found in Part H Cost Summary Table. An Approval Page for the U.S Fish and Wildlife Service is provided as a signature page for agency review and approval.

PART A - FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	South End Complex & Basque Wells & Craters Fire
Fire Number	OR-BUD-2494, 2501, 2506,2531
Agency Unit	US Fish and Wildlife Service
Region	R1 Regional Office
State	Oregon
County(s)	Harney
Ignition Date/Cause	08/2102006 Dry lightning/Pending Investigation
Zone	Malheur Wildlife Refuge
Date Fully Contained	08/24-09/24/2006
Jurisdiction	MNR 4,149 Acres

PART B - NATURE OF PLAN

Type of Action (check one box below)

	Initial Submission
XX	Amendment to Initial Submission

PART C - REHABILITATION ASSESSMENT

Rehabilitation Objectives

- Replace infrastructure facilities destroyed/damaged by fire.
- Protect Federal Candidate and State Sensitive species.
- Restore critical stream and riparian habitat.
- Prevent the establishment of non-native invasive plants within burned area boundaries.
- Protect Cultural Resources

TREATMENTS

FY 2007 stabilization treatments included the following activities:

1. Funding of an Implementation Leader and associated personnel to oversee implementation of the South End Complex ES Plan.
2. Drill/seed 107 acres in the Grandad burn area (GPS seeding at 69 acres).
3. Monitor 69-acre seeding and designated noxious weed areas.
4. Control invasive weeds via a herbicide treatment contract.
5. Conduct noxious weed detection on fire disturbed areas.
6. Repair damaged refuge boundary fence via contract.
7. Construct a temporary passage protective fence via contract.
8. Assessment of known Cultural Resource sites from fire damage.
9. Patrol and monitor known Cultural Sites.
10. Perform Native American Consultation on Cultural Resources.
11. Replace fire damaged refuge protection signs.
12. Inspect/repair instream structures and fish screens.
13. Cultural Resource Protection, clearances on Emergency Stabilization Projects.

PART D - TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

Burned Area Rehabilitation/Restoration Team Members:

Position	Team Member (Agency)
Implementation Leader	Edward Gheen (FWS)
Fire Management Officer	Shane Theall (FWS)
Refuge Manager	Donna Stovall (FWS)
Deputy Refuge Manager	Chad Karges (FWS)
Public Information	Carey Goss (FWS)
Administrative officer	Tami Coe (FWS)
Operations/Maintenance	Tom Downs (FWS)
NEPA Compliance & Planning	Carla Burnside (FWS) / Edward Gheen (FWS)
Hydrologist/Wetland Plant Ecologist	J.Chris Hoag (NRCS)
Soil Scientist	Pam Keller, Soil Scientist/GIS Specialist (BLM)
Cultural Resources/Archeologist	Carla Burnside (FWS)
Vegetation Specialist	Jess Wenick (FWS)
Wildlife Biologist	Rick Roy (FWS)
GIS Specialist	Louise Zeringue/Wesley Abplanalp (FWS)
Biological Science Technician	Wesley Abplanalp (FWS)
Buena Vista Maintenance	Andy Renc
P Ranch Maintenance	Bill Modey
Documentation/Computer Specialist	Edward Gheen/Louise Zeringue (FWS)
Photographer	Edward Gheen

PART E – FY 2007 FINDINGS AND RECOMMENDATIONS

**First Year Monitoring ESR Implementation
South End Complex
&
Basque Wells & Craters Fire**

Malheur National Wildlife Refuge

August 30, 2007



**BRIDGE CREEK BURN, AUGUST, 2006
PHOTO, APRIL 5, 2007**

LIST OF ACTIVITIES, 2007

1. Edward Gheen began work on March 05, 2007 as the Implementation Leader, Louise Zeringue was onboard on April 16, 2007 as the GS-7 Biologist Aide, and Wesley Abplanalp as of July 8, 2007 as the GS-5 Biologist Technician.
2. The 69 acre seeding (107 acre in plan) in the Grandad burn area was completed by BLM in October, 2006.
3. Monitoring of the 69 acre seeding and weed control areas began in June 2007 and was completed on August 20, 2007.
4. The Noxious weed control contract was awarded April 9, 2007. Treatment was completed for the Grandad burn area on August 20, 2007; Craters area on August 25, 2007, and Basque Wells on August 27, 2007.
5. Noxious weed areas scheduled for herbicide treatment and monitoring were selected using GPS and mapping tools.
6. Fence contract was awarded on March 9, 2007. The boundary fence repairs for the Grandad/Craters/Basque Wells burns were inspected and completed on May 2, 2007.
7. The temporary protection fence contract was awarded March 9, 2007. Construction was inspected and completed on June 20, 2007.
8. Assessment of fire damage to 40 Cultural Resource sites began in March 2007, and was completed June 15, 2007.
9. Patrol and monitor known Cultural Sites began June 2007 and was completed on August 21, 2007.
10. Native America Consultation with the Burns Paiute Tribe was accomplished April, 2007.
11. Replacement of 50 fire damaged Refuge Protection signs was completed on August 15, 2007.
12. Cleaning and repair of 25 instream structures completed June 2007.
13. Cultural clearances for 2 projects were completed by Carla Burnside, Archaeologist in June 2006 (seeding), and February 2007 (fence).

1-5. Monitoring of Seeding and Noxious Weed Control, Malheur Wildlife Refuge

A Monitoring Plan for the Malheur National Wildlife Refuge burn areas was developed in March 2007. Monitoring of burn areas to be treated for noxious weeds was initiated after spring growth and completed in August 2007. A total of 2,204 acres of noxious weeds areas were identified and GPS measured. The purpose of monitoring was to measure effectiveness of the noxious weed spray contract and proposed future (FY 2008) seeding and erosion/noxious weed control measures.

Sampled areas were selected to represent noxious weed infestations. Not all burned areas have experienced high levels of infestations, however the potential is there as long as the seed source remains in those infested areas (refer to individual maps outlining weed infestation areas, Appendix I).

Methods

Monitoring was accomplished by August 20, 2007. Three Quadrat-Frequency transects (Craters Burn-1, Grandad Burn/seeding-2,) and six Photo Plot transects (Craters Burn-4, Grandad Burn-2) were installed.

A total of 100 Quadrat plots per transect located in key areas @ 3 each or 300 and six Photo Plots using 9 - 1/16 sq ft measurements or 144 measurements per plot gave acceptable statistical coverage for monitoring the burn areas and relative success of noxious weed control. Photo Plot transects were placed at key representative areas. Quadrat Frequency transects were positioned randomly. Vegetative parameters measured were: basal and foliar cover, species composition of re-occurring plants, number of plants per square foot and per acre, average noxious weeds per square foot and per acre. Additional transect information collected included bare ground, rock and litter. Attention was given to active erosion and average ground cover for the area. Ed Gheen, Louise Zeringue and Wesley Abplanalp collected data and made interpretations and completed the monitoring in the two major burn areas on the refuge, Craters and Grandad. Basque Wells was inspected in the spring /summer (2007) and a small area with a scattering of Perennial pepperweed, Canada and Scotch thistle was measured by GPS.

Vegetation / Range Resource / Wildlife Resource Assessments Recommendations from the South End Complex and Basque Wells & Craters Fires Burned Area Emergency Stabilization Plan specified seeding areas experiencing moderate to heavy above ground vegetation mortality. These sites on the refuge, however, were not seeded. A 69-acre (107-acre planned) seeding (2006) in a bench upland field was monitored, as were burned area noxious weed control areas.

Chris Hoag, Wetland Plant Ecologist (NRCS, Aberdeen, Idaho) was asked to assess the fire damage to Mud Creek and give recommendations on restoration methods. Hoag used the Stream Visual Assessment Protocol (SVAP) that was developed by the NRCS (1998). This protocol assesses up to 15 different factors on the stream and gives a repeatable evaluation of its condition. We looked at 12 different factors and rated them. Hoag's evaluation and report is included as an attachment to this document. Mr. Hoag has an exemplary record of applying wetland-riparian principals to environmental problems in the Western United States.

Findings

The following results are an average of three – 100 Quadrat-frequency plot transects (300 plots) using a 100 foot center line with 10 randomly located transects @ 10 plots each, and six Photo Plots using 9 - 1/16 sq ft measurements or 144 measurements per plot (BLM - Rangeland Monitoring - Trend Studies, TR 4400-4).

Table 1. Monitoring Findings for 2007, Noxious Weed Control Burn Areas

Measure	2007	2008
Basal Vegetation Cover Percent	5.16	
Key Species Percent Composition	19.50	
Average Plants per Acre	338,025.00	
Average Plants per Square Foot	7.76	
Average Ground Cover percent (litter)	39.14	
Average Bare Ground Percent	51.00	
Average Litter Percent	37.00	
Average Noxious Weeds per Square Foot	2.86	

Key monitoring findings FY 2007 were:

1. Noxious weed (by species) density before and after treatment ranged from:

Canadian Thistle - 4 plants per square foot to 3 plants per square foot.

Perennial Pepperweed – 2 plants per square foot to 0.8 plants per square foot.

Russian Knapweed – 3 plants per square foot to 3 plants per square foot (Late treatment, Plan ready to submit, not able to observe spray results).

2. Ground cover (Live Vegetation) increased from 16.9 % to 19.7 %.
3. High priority stream bank erosion (Mud Creek) was recorded in June as 20 banks averaging 5 1/2 feet tall and 1026 feet in length needing protection.

Discussion

This is what we learned FY 2007 about weed control: Our monitoring has shown that we've not had much of an impact on Canada thistle. Spraying commenced a month later than the contract recommended, due to uncontrollable work delays. We were advised that the chemical Telar should be used on Perennial Pepperweed and Canada Thistle. We've had good results on pepperweed, but minimal results on thistle. After visiting with a chemical company Ed's been advised to use milestone on Canada Thistle. Thistle is still being sprayed (as are the Russian knapweed sites) as this document is ready to be sent to the regional office (August 17, 2007). In other words, we need more contracting options to address the noxious weed problem on this refuge. Our monitoring sites have been located to reflect any changes to frequency and trend of noxious weed occurrence. We are confident that next year we will have a more effective approach in invasive weed control.

Recommendations

Recommendations which will assist in management decisions were made based on the findings of the monitoring. These recommendations are:

- A) A seasonal Invasive Weed Control Window to be used at the Malheur National Wildlife Refuge was developed based on past weed control performance.

Canada Thistle: May 15 - July 15, especially during rosette stage.

Perennial Pepperweed: EARLY; Pre Bloom stage, 8-10 inches high through flowering stage, normally May 15 - July 30.

Perennial Pepperweed: LATE; Bud stage, late summer-fall, August - October

Russian Knapweed: EARLY; Rosette stage, May 15 - June 1.

Russian Knapweed: LATE; July 15 - August 30 (Burn or Mow off Skeletons).

B) Any use of domestic livestock within the refuge boundaries must be carefully planned to avoid transportation of weed seed into areas presently free of noxious weeds. Interior fences in sensitive areas should be repaired and maintained annually.

Monitoring of Seeded Area in Grandad Burn (107 Acre plan/69 Acre GPS)

Table 2. 2006 Seeded Species, Composition, Grandad Burn, (Seeding in Upland Bench Area)

Seeded Plants	2007 Percent
Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>)	42.3
Sandberg bluegrass (<i>Poa sandbergii</i>)	48.5
Western yarrow (<i>Achillea millefolium</i>)	3.0
Blue flax (<i>Linum lewissii</i>)	6.1
Total	100.0

Table 3. Other Competing Plants In 69 Acre – 2006 Seeding

Other Plants	2007 %Composition
Cheatgrass (<i>Bromus tectorum</i>)	58.3
Squirreltail (<i>Elymus elymoides</i>)	11.9
Clasping pepperweed (<i>Lepidium perfoliatum</i>)	11.9
Sandberg bluegrass (<i>Poa secunda</i>)	2.4
Smallseed falseflax (<i>Camrlina microcarpa</i>)	7.7
Tumble mustard (<i>Sisymbrium altissimum</i>)	6.0
Western salsify (<i>Tragopogon dubius</i>)	0.6
Flixweed (<i>Descurainia Sophia</i>)	0.6
Fiddleneck (<i>Amsinckia intermedia</i>)	0.6
Total	100.0

Table 4. Species Composition for 2006 Seeded and Other Plants

Plants	2007 Percent	2008 Percent
Seeded Plants	00.0	
Other Plants	100.0	
Total	100.0	

Methods

The 69-acre seeding was completed by BLM on October 6, 2006. The following species and seeding rate was applied:

Bluebunch wheatgrass.....	5 Lb/Acre
Sandberg bluegrass.....	3 Lb/Acre
Western yarrow.....	0.5 Lb/Acre
Blue flax.....	0.5 Lb/Acre

Findings

Preliminary evaluation of the Grandad seeding revealed no spring sprouting of seeded species. The Refuge received several spring rains that would have been enough to adequately sprout seed. There was, however, several months of cold temperature with the spring rains and associated soil temperatures that may not have been high enough to germinate seed. Subsequent examinations showed little change in sprouting success. This seeding will be evaluated again next spring.

Noxious Weed Treatment

Invasive weed treatments were initiated in fiscal year 2007. After a spray contract was issued through the refuge, a noxious weed control contractor began in June 20, 2007 spraying Perennial Pepperweed, Canada and Scotch Thistle, Whitetop, and Russian Knapweed in the Craters and Grandad burn areas. Problems with equipment and other delays caused a late start in July. High priority noxious weed treatment areas are identified on GPS maps (Appendix I). Treatments by the contractor and refuge employees continued through August 2007. Combining the three burn areas (Craters/Grandad/Basque Wells), a total of 2204 acres were treated.

Table 5. Noxious Weed Treatment by Burn Area, 2007

Burn Area	High Priority Acres	Date Completed
Grandad	395	August 24
Craters	1,779	August 15
Basque Wells	30	August 27
Totals	2,204	August 27

6. Boundary Fence Repair, Malheur Wildlife Refuge

Findings

Fire damage occurred along 11.5 miles of boundary fence between the refuge and BLM. Stream crossings on Mud and Bridge Creeks (Grandad Burn) had been cut and removed during fire control activities. Other areas experienced excessive fire heat and the fence needed replacement. The majority of the eastern portion of fence in the Craters Burn needed complete fence replacement.

Table 6. Boundary Fence Repair Completed, 2007

Burn Area	Miles	Completed 2007
Grandad	5.0	April 2
Craters	3.5	April 24
Basque Wells	3.0	May 2
Totals	11.5	May 2

7. Temporary Passage Protective Fence

Findings

A refuge protective fence was built to allow traditional livestock trailing through the Grandad Burn area. This double fence will prevent cattle from wandering onto refuge lands burned by the South End Complex fires and protect seeded areas and areas managed for natural recovery.

Table 7. Temporary Protective Fence Completed, 2007

Burn Area	Miles	Completed 2007
Grandad	4.75	June 20
Total	4.75	June 20

Methods

Instructions were given to the contractor on site in the field. Early site visits were made daily. Later, weekly visits were made to assure that construction was progressing as required.

Findings

Construction was accomplished June 20, 2007 as per specifications.

Discussion

Future fencing contracts should include a pre-contract inspection by refuge personnel to determine actual fire damage to provide a more accurate appraisal of needed repairs and associated costs.

8. Assessment of Known Cultural Resource Sites

Thirty-four prehistoric and six historic cultural resource sites were assessed using criteria established by Cultural Resource Specialists on the Department of Interiors Burned Area Emergency Response Team. The criteria includes, but was not limited to burn severity, whether features are present, erosional threats, fire effects and suppression effects. Two sites within the Craters Fire area were impacted by suppression activities and these sites will be monitored for potential erosion. The site areas of all prehistoric sites were determined to be larger than originally mapped as the result of vegetative cover removal. No significant wood elements at historic sites were impacted by the fires.

Table 8. Location and Number of Cultural Sites

Location	Number	Completed 2007
Malheur Refuge	44	June 15

9. Patrol and Monitor Known Cultural Sites

Methods

Cultural resource sites within and adjacent to fires that are at risk of looting and vandalism require monitoring. Louise Zeringue, Ed Gheen, and Wesley Abplanalp patrolled and monitored cultural resource sites on the Malheur Refuge in coordination with Law Enforcement Officer John Megan.

Illegal excavation occurred at one prehistoric site on the Grandad Fire. It is believed that the individuals involved in this illegal activity entered the area from adjacent Bureau of Land Management lands. The damage to the site was documented and law enforcement patrols increased in the area.

10. Native American Consultation

Consultation with Burns Paiute Tribe (Tribe) was not officially instigated until July when a Culture and Heritage Specialist was employed by the Tribe and was available to visit each of the fire areas. The Refuge Archaeologist discussed stabilization plans with members of the Tribal Council on February 1, 2007. On-site consultation included identification of prehistoric sites within each fire area, the results of site assessments, the presence of culturally important plants, and future restoration plans.

11. Replace Fire Damaged Signs

Resource protection signs were damaged as a result of the Craters, Grandad and Basque Wells fires. These signs need to be replaced in order to protect resources from damage associated with unauthorized use.

Table 9. Refuge Protection Signs Replaced

Burn area	Number	Completed 2007
Grandad	20	August 15
Craters	12	July 11
Basque Wells	18	July 18
Total	50	August 15

12. Cleaning and Repair of Instream Structures, Fish Screens and Other Facilities.

Maintenance crews identified structures needing cleaning and repairs. Twenty five diversion structures and screens were inspected and repaired.

Table 10. Instream Structures Repaired

Burn Area	Number	Completed 2007
Grandad	25	June 15

13. Cultural Clearance for Emergency Stabilization Projects such as Seeding and Fencing.

Cultural resource clearances were conducted for two ground disturbing projects. One hundred and seven acres proposed for reseeding in the Grandad Fire were surveyed in September 2006. Cultural resource sites adjacent to the proposed seeding were identified and flagged for avoidance. An additional 4.75 miles of linear survey was conducted in advance of the installation of temporary fence between Knox Springs and Bridge Creek on the Grandad Fire. Installation of this fence prevented livestock damage to the 107 seeded acres, but also excludes trailing livestock from eleven prehistoric sites burned during the fire, increasing vegetation recovery and lessening the visibility of these sites to potential looting.

Table 11. Cultural Clearance Accomplished

Burn Area	Number	Completed 2006/2007
Grandad	2	2
Craters	0	0
Basque Wells	0	0

PART F. SUMMARY OF WORK COMPLETED AND COSTS, 2007

TREATMENT SPECIFICATIONS	WORK COMPLETED FISCAL YEAR 2007
Specification # 1 Implementation Leader, Admin. Assistant Materials/Supplies/Travel	Funding a Project Leader and assoc. personnel to oversee implementation of the South End Complex ES Plan Personnel/Supplies/Travel Cost: \$ 78,664
Specification # 2 Drill/Seed (107) 69 Acres Grandad Burn Area	Seeding was completed by drilling the native mix with a BLM rangeland drill with 1 inch depth bands. Seeding was accomplished by BLM in October, 2006. Personnel/Material Cost: Seed \$ 9,211
Specification # 3 Monitor Seeding & Noxious Weeds	Monitored (107) 69 acre seeding (Grandad Burn), and 2515 acres of Noxious Weeds Personnel/Material/Camera Cost: \$ 1,416
Specification # 4 Control Invasive Weeds, Chemical Treatment	Contract awarded April 9, 2007. Work began June 19, 2007, and completed September 20, 2007. Total Cost: \$ 176,040
Specification # 5 Noxious Weed Detection	Conducted noxious Weed Surveys within burn areas Personnel Cost: \$ 12,696
Specification # 6 Boundary Fence Replacement	Contract awarded March 09, 2007. Ed toured fence locations with contractor, inspected 11.5 miles as repairs completed. All boundary fence repairs completed May 7, 2007. Total Cost: \$ 67,962
Specification # 7 Temporary Protective Fence	Contract awarded March 09, 2007. Project completed June 20, 2007. 4.75 miles of fence inspected June 22, 2007 Total Cost: \$ 29,578
Specification # 8 Assessment of known Cultural Resource Sites	Assessment of fire damage to 41 sites commenced March 10, 2007 and was completed June 15, 2007 Personnel Cost: \$ 18,685
Specification # 9 Patrol and Monitor Known Cultural Sites	Monitoring commenced June 1, 2007 and was completed on August 21, 2007 by Ed Gheen, Louise Zeringue and Wesley Abplanalp and John Megan, refuge law enforcement Personnel/Material Cost: \$ 25,056
Specification # 10 Native American Consultation	Field consultation with the Cultural Resource Program Director for the Burns Paiute Tribe Personnel Cost: \$ 2,827
Specification # 11 Replace Fire Damaged Refuge Protection Signs	March 2007, Ed ordered 50 Refuge Boundary and 25 Research Natural Area replacement signs. Damaged signs replaced by Wesley and Ed by July 30, 2007. Cost of Replacement Signs: \$1,405
Specification # 12 FWS Debris Removal	Maintenance crews inspected and cleaned/repared 25 instream structures and fish screens. Personnel/Material Cost: \$ 22,750
Specification # 13 Cultural Resource Protection – Treatment Clearances - USFWS	Emergency Stabilization Areas designated for seeding (107 acres) and temporary fencing (4.75 miles) were surveyed and cleared by Carla Burnside, Archaeologist on Sept?? 2006. Personnel/Material Cost \$ 1,428

Table 12. Comparison of Projected vs. Actual Costs, FY 2007

TREATMENT SPECIFICATION	PROJECTED COST	ACTUAL COST	ACCOUNTING COMMENTS
Specification #1 Implementation Leader, Administration Assistant/Supplies	\$ 78,664	\$ 78,664	
Specification #2 Drill/Seed (107) 69 Acres Grandad Burn Area	\$ 10,121	\$ 9,211	\$ 910 Savings
Specification # 3 Monitor Seeding and Noxious Weed Control	\$ 1,416	\$ 1,416	
Specification # 4 Control Invasive Weeds, Chemical Treatment	\$ 176,040	\$ 176,040	
Specification # 5 Noxious Weed Detection	\$ 12,696	\$ 12,696	
Specification # 6 Boundary Fence Replacement	\$ 67,962	\$ 67,962	
Specification # 7 Temporary Protective Fence	\$ 29,578	\$ 29,578	
Specification # 8 Assessment of Known Cultural Resource Sites	\$ 18,685	\$ 18,685	
Specification # 9 Patrol and Monitor Cultural Sites	\$ 25,056	\$ 25,056	
Specification # 10 Native American Consultation	\$ 2,827	\$ 2,827	
Specification # 11 Replace Fire Damaged Refuge Signs/Posts	\$ 952	\$ 1,405	\$ - 453 (overrun)
Specification # 12 FWS Debris Removal	\$ 22,750	\$ 22,750	
Specification # 13 Cultural Resource Protection – Treatment Clearances - USFWS	\$ 1,428	\$ 1,428	
TOTAL	\$ 448,175	\$ 447,718	\$ 457 Remaining

REHABILITATION TREATMENTS RECOMMENDED FOR FY 2008

This plan addresses the following rehabilitation treatments for FY 2008:

1. Continue treatment of invading noxious weeds in heavily burned locations where the understory/overstory of native grasses, shrubs and trees have been removed and other recorded sites within the burn boundaries. Recommend using Milestone herbicide for Canada thistle and Russian knapweed and using Telar herbicide for perennial pepperweed. Seed heavily burned areas with grasses to control and prevent spreading of remnant noxious weeds.

The increased presence of communities of noxious weeds are reducing significantly the total shrub, grass, sedge, and forb base of wildlife habitat on the Malheur Refuge. The successional changes in the extent and distribution of noxious weeds which has occurred necessitates an increased management approach. Additional quality control work months for the GS-11/7/5 are required to accomplish this program. Field tours of prospective contractors, contracting coordination and supervision, field inspections and monitoring will add additional field time.

2. Replace ground cover and woody riparian vegetation along Mud and Bridge Creeks that were destroyed by intensive fire occurrence. Install willow brush mats and bundles on identified high erosion priority stream banks in Mud Creek. Replace lost habitat conditions for the Columbia Spotted frog, a Federal Candidate Species, and the Native Redband trout, a State Listed Species of Concern.
Contracting supervision and day to day rehabilitation field activities will require increased work months for the GS-7/5 Range and Biologist technicians. Field work will involve a multitude of various tasks including hand work and physical labor for plantings, bank preparation, seeding, willow-mat preparation and coordination of all activities of contractors and their workers.
3. Seed severely burned areas (intensive fire occurrence sites to provide ground cover) within the Craters and Grandad burn boundaries.
4. Install additional monitoring sites within riparian/native ecosystems and noxious weed treatment areas to record results of rehabilitation efforts and trend.
5. Identify areas where public access closures may be necessary to protect public safety, natural recovery and active stabilization or rehabilitation treatments.

PART G. PROPOSED CONTINUING ACTIVITIES FOR FY 2008

Many native plant communities in the Malheur Refuge dominated by a shrub overstory experienced severe burns and mortality. With the ever-presence of invasive weeds, the probability of conversion of these areas to invasive annuals and perennials is high. FWS Range and Wildlife personnel recommend seeding of these areas to native species, allowing for future herbicide treatments to control noxious weeds. Noxious weeds present on the refuge include Perennial pepperweed, Whitetop, Russian knapweed, Canada and Scotch thistle.

In August 2006 both Bridge and Mud Creeks (Grandad Fire) experienced severe damage from wild fire. Both creeks have experienced severe grazing pressures in the past and were on an upward recovery. Unfortunately, the fires caused significant damage to the vegetation and recovery on these riparian systems has been set back as a result of direct mortality and destabilization of the stream channels. Intensive fire occurrence over a major portion of Mud Creek (90 %) and portions of Bridge Creek (50 %) removed all ground cover. Root masses have been destroyed reducing their stabilizing influence, leading to bank failure and mass soil movement.

The existing beaver population is also of concern. The fires have drastically reduced the beaver's food resources and the remaining woody vegetation making any new growth at risk of over utilization. The over utilization of this vegetation could further delay the recovery of both systems. Removal of the beavers is not considered a viable option. In the long run, it is believed that beavers will play a major role in reestablishing proper functioning riparian habitats in these systems and aid in developing natural fire breaks.

Both drainages have populations of the Columbian spotted frog, a federal candidate species and Redband trout, a State sensitive species. Further degradation of the riparian habitat reduces the Refuge's ability to manage and recover these species.

The solution to both creeks is to intervene and jump start vegetative recovery and bank stabilization. The first step is to place vertical live willow bundles and mats on those cut banks experiencing erosion. This should be accomplished in late fall or early spring. The willows provide immediate protection through increased roughness, and live cuttings eventually root and provide permanent reinforcement. In addition, juniper branches and stems will be used to increase channel roughness and reduce energy from water during high flows in the primary and secondary channels.

The second step is to plant riparian trees and shrubs native to the area, especially species such as: red osier dogwood; black hawthorn; elderberry; serviceberry; choke cherry; buffalo berry; black cottonwood; aspen; and snow berry. New plantings will be protected from over-utilization with plastic plant protectors and juniper limbs and stems.

Finally exposed open areas above stream banks will be seeded to riparian and upland native species to stabilize and provide competition for invasive noxious weeds. Re-creating and enhancing these riparian corridors will add greatly to the existing wildlife diversity, but these riparian corridors will also be

effective natural fire breaks in the event of another wildfire in the vicinity.

Without this rehabilitation effort, massive siltation of both creeks will occur with disastrous impacts to both redband trout and Columbian spotted frog, not to mention the many associated wildlife species that utilize riparian habitats. Invasion of noxious weeds (Perennial pepperweed, Canada and Scotch thistle) and annual vegetation prone to frequent fire will occur.

The assessment of risk to both Mud and Bridge creek drainages without this restoration effort is further degradation to both stream channel and associated uplands. It is imperative to restore the fish and wildlife quality and productivity of these systems before further damage results.

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